BNFL Inc.

RIVER PROTECTION PROGRAM-WASTE TREATMENT PLANT

SAFETY IMPLEMENTATION NOTE

SIN Number:	SIN-W375-99-00032	**Rev.**	1
Area:	All	**System:**	N/A
Subject:	Implementing Standards for NPH Analysis and Design		
Originator:	Richard I. Smith	**Date:**	September 3, 1999
Technical Review:	Andy Larson	**Date:**	9/7/99

This Safety Implementation Note transmits the results of the BNFL Inc. evaluation of several of the implementing standards associated with the analysis and design of SSCs to withstand the loads imposed by natural phenomena hazards (NPH).

SRD Safety Criteria 4.1-2 through 4.1-5 include the following as implementing standards:

- DOE-STD-1020-94, "Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities," Change Notice 1, January 1996
- ANSI/AISC N690-1994, "Specification for the Design, Fabrication, and Erection of Steel Safety-Related Structures for Nuclear Facilities"
- DOE-STD-1021-93, "Natural Phenomena Hazards Performance Categorization Guidelines for Structures, Systems, and Components," Change Notice 1, January 1996

The process of establishing the seismic analysis and design approach for the project has resulted in the need to tailor the requirements contained in DOE-STD-1020-94 and ANSI/AISC N690-1994, and to eliminate DOE-STD-1021-93 as an implementing standard from the referenced SRD Safety Criteria.

To that end, the following four (4) attachments are provided:

- Attachment A – Lists the documents that establish the Project's seismic analysis and design approach.
- Attachment B – Identifies the tailoring required for DOE-STD-1020-94.
- Attachment C – Identifies the tailoring required for ANSI/AISC N690-1994.
- Attachment D – Justifies the elimination of DOE-STD-1021-93 as an implementing standard.

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Attachment A

Documents that Establish the Project's Seismic Analysis and Design Approach

Document	Transmittal Letter to the RU
"TWRS-P Facility Design Basis Earthquake - Peak Ground Acceleration, Seismic Response Spectra, and Seismic Design Approach," RPT-W375-RU00002, Rev. 2, dated June 9, 1999	BNFL Inc. Letter 003946 dated June 14, 1999
"Applicability of DOE Documents to the Design of the TWRS-P Facility for Natural Phenomena Hazards," RPT-W375-RU00003, Rev. 1, dated June 9, 1999	BNFL Inc. Letter 003946 dated June 14, 1999
"Validation of the Geomatrix Hanford Seismic Report for Use on the TWRS Privatization Project," RPT-W375-RU00004, Rev. 0, dated March 17, 1999	BNFL Inc. Letter 002075 dated March 18, 1999
"Seismic Analysis and Design Approach," RPT-W375-RU00005, Rev. D, dated August 6, 1999	BNFL Inc. Letter 005331 dated August 11, 1999

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Attachment B

Tailoring of DOE-STD-1020-94

The following discussion addresses the tailoring of DOE-STD-1020-94, "Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities," for use by BNFL Inc. as an Implementing Standard for seismic analysis and design.

Page 1-6, Section 1.3, Evaluation of Existing Facilities

Delete this section.

Justification: This section deals with existing facilities and the RPP-WTP Facility is a new facility.

Page 2-1, Section 2.2, General Approach for Seismic Design and Evaluation

Use 1997 UBC in lieu of 1994 UBC.

Justification: 1997 UBC is more current.

Design PC-3 (Seismic Category I) SSCs for the elastic seismic response to DBE per Section 3.7.2 of NRC NUREG-0800, Rev. 3 (Draft) with no credit for inelastic energy absorption. Note: Credit for inelastic energy absorption is allowed in the design of PC-3 (Seismic Category II) SSCs.

Justification: This change is made for consistency with NRC acceptance criteria.

Use ASCE 4-98 (Draft) in lieu of ASCE 4-86.

Justification: ASCE 4-98 (Draft) is more current.

Page 2-6, Section 2.3, Seismic Design and Evaluation of Structures, Systems, and Components

Perform performance categorization of SSCs per SRD Safety Criteria 4.1-3 and 4.1-4 in lieu of DOE-STD-1021-93.

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Justification: DOE-STD-1021-93 is inconsistent with the top-level safety principles in DOE/RL-96-0006. The functions of this standard are implemented by SRD Safety Criteria 4.1-3 and 4.1-4 and Appendix A to Volume II of the SRD.

Page 2-8, Section 2.3.1, Performance Category 1 and 2 Structures, Systems, and Components

Use 1997 UBC in lieu of 1994 UBC.

Justification: 1997 UBC is more current.

Page 2-12, Section 2.3.2, Performance Category 3 and 4 Structures, Systems, and Components

Disregard the requirements for PC-4 SSCs.

Justification: There are no PC-4 SSCs at the RPP-WTP Facility.

Design PC-3 (Seismic Category I) SSCs for the elastic seismic response to DBE per Section 3.7.2 of NRC NUREG-0800, Rev. 3 (Draft) with no credit for inelastic energy absorption. Note: Credit for inelastic energy absorption is allowed in the design of PC-3 (Seismic Category II) SSCs.

Justification: This change is made for consistency with NRC acceptance criteria.

Use ACI 349 for design of reinforced concrete in lieu of UBC.

Justification: This change is made for consistency with NRC acceptance criteria contained in Section 3.8.4 of NUREG-0800, Rev. 2 (Draft).

Use ANSI/AISC N690 for design of structural steel in lieu of UBC.

Justification: This change is made for consistency with NRC acceptance criteria contained in Section 3.8.4 of NUREG-0800, Rev. 2 (Draft).

Page 2-15, Section 2.3.3, Damping Values for Performance Category 3 and 4 Structures, Systems, and Components

Use ASME Code Case N-411 damping value for piping in lieu of those shown in Table 2-3.

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Justification: This value is acceptable to the NRC for nuclear power plants.

Page 2-18, Section 2.4.1, Equipment and Distribution Systems

Perform seismic design of PC-1 and -2 elements of structures and equipment per the provisions of 1997 UBC in lieu of 1994 UBC.

Justification: 1997 UBC is more current.

Page 2-22, Section 2.4.2, Evaluation of Existing Facilities

Delete this section.

Justification: This section deals with existing facilities and the RPP-WTP Facility is a new facility.

Page 2-24, Section 2.5, Summary of Seismic Provisions

Disregard the requirements for PC-4 SSCs.

Justification: There are no PC-4 SSCs at the RPP-WTP Facility.

Design PC-3 (Seismic Category I) SSCs for the elastic seismic response to DBE per Section 3.7.2 of NRC NUREG-0800, Rev. 3 (Draft) with no credit for inelastic energy absorption. Note: Credit for inelastic energy absorption is allowed in the design of PC-3 (Seismic Category II) SSCs.

Justification: This change is made for consistency with NRC acceptance criteria.

Use the seismic provisions in Table 2-5 concerning PC-3 SSCs except that the structural capacity is to be based on code ultimate strength or allowable behavior level.

Justification: Limit-state level method of determining the structural capacity is more appropriate for evaluation of existing facilities (the RPP-WTP Facility is a new facility).

Page 3-1, Section 3.1, Introduction

Perform performance categorization of SSCs per SRD Safety Criteria 4.1-3 and 4.1-4 in lieu of DOE-STD-1021-93.

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Justification: DOE-STD-1021-93 is inconsistent with the top-level safety principles in DOE/RL-96-0006. The functions of this standard are implemented by SRD Safety Criteria 4.1-3 and 4.1-4 and Appendix A to Volume II of the SRD.

Page 3-2, Section 3.2, Wind Design Criteria

Use peak gust speed values contained in Attachment "A" of DOE Interim Advisory dated 1/22/98 in lieu of fastest-mile wind speeds shown in Table 3-2; also, per DOE Interim Advisory, use an importance factor for PC-2 SSCs of 1.0 in lieu of 1.07 indicated in Table 3-1.

Justification: The Newsletter was issued by DOE as an interim measure for use with DOE-STD-1020-94 until such time as the standard is revised.

Page 3-5, Section 3.2.1, Performance Category 1

Design structural steel PC-1 structures per AISC Manual of Steel Construction, Allowable Stress Design, Ninth edition.

Justification: The AISC code is preferred to the UBC because it is a national consensus code.

Design reinforced concrete PC-1 structures per ACI 318-95.

Justification: The ACI 318 code is preferred to the UBC because it is a national consensus code.

Page 3-6, Section 3.2.2, Performance Category 2

Design structural steel PC-2 structures per AISC Manual of Steel Construction, Allowable Stress Design, Ninth edition.

Justification: The AISC code is preferred to the UBC because it is a national consensus code.

Design reinforced concrete PC-2 structures per ACI 318-95.

Justification: The ACI 318 code is preferred to the UBC because it is a national consensus code.

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Page 3-6, Section 3.2.3, Performance Category 3

Design structural steel PC-3 structures per ANSI/AISC N690-94.

Justification: This change is made for consistency with NRC acceptance criteria contained in Section 3.8.4 of NUREG-0800, Rev. 2 (Draft).

Design reinforced concrete PC-3 structures per ACI 349-97.

Justification: This change is made for consistency with NRC acceptance criteria contained in Section 3.8.4 of NUREG-0800, Rev. 2 (Draft).

Disregard requirements for tornado design.

Justification: Tornado is not a credible NPH at the RPP-WTP Facility site.

Page 3-11, Section 3.2.4, Performance Category 4

Delete this section.

Justification: There are no PC-4 SSCs at the RPP-WTP Facility.

Page 3-13, Section 3.3, Evaluation of Existing SSCs

Delete this section.

Justification: This section deals with existing facilities and the RPP-WTP Facility is a new facility.

Page 4-1, Section 4.0, Flood Design and Evaluation Criteria

Disregard criteria for the design of SSCs for river flooding.

Justification: River flooding is not a credible NPH at the RPP-WTP Facility site, and only the criteria dealing with local precipitation that affects roof design and site drainage are applicable to the RPP-WTP Facility design.

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Page 4-4, Section 4.1.2, Flood Evaluation Process

Perform performance categorization of SSCs per SRD Safety Criteria 4.1-3 and 4.1-4 in lieu of DOE-STD-1021-93.

Justification: DOE-STD-1021-93 is inconsistent with the top-level safety principles in DOE/RL-96-0006. The functions of this standard are implemented by SRD Safety Criteria 4.1-3 and 4.1-4 and Appendix A to Volume II of the SRD.

Page 4-12, Section 4.2.4, Performance Category 4

Delete this section.

Justification: There are no PC-4 SSCs at the RPP-WTP Facility.

Page 4-13, Section 4.3.3, Site Drainage and Roof Design

Use 1997 UBC in lieu of 1994 UBC.

Justification: 1997 UBC is more current.

Page 4-15, Section 4.4, Considerations for Existing Construction

Delete this section.

Justification: This section deals with existing facilities and the RPP-WTP Facility is a new facility.

Page 4-16, Section 4.5, Probabilistic Flood Risk Assessment

Do not perform a probabilistic flood risk assessment of the RPP-WTP Facility site.

Justification: UCRL-21069, "Probabilistic Flood Hazard Assessment for the N Reactor, Hanford, Washington," July 1988, contains a probabilistic flood risk assessment of the N reactor site. The RPP-WTP site is close to the N Reactor site (about 10 miles away) and further away from the Columbia River. Therefore, the N Reactor flood assessment may be used and no assessment of the RPP-WTP site is required.

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Page B-4, App. B, Section B.2, Graded Approach, Performance Goals, and Performance Categories

Perform performance categorization of SSCs per SRD Safety Criteria 4.1-3 and 4.1-4 in lieu of DOE-STD-1021-93.

Justification: DOE-STD-1021-93 is inconsistent with the top-level safety principles in DOE/RL-96-0006. The functions of this standard are implemented by SRD Safety Criteria 4.1-3 and 4.1-4 and Appendix A to Volume II of the SRD.

Page B-8, App. B, Section B.3, Evaluation of Existing Facilities

Delete this section.

Justification: This section deals with existing facilities and the RPP-WTP Facility is a new facility.

Page C-1, App. C, Section C.1, Introduction

Perform performance categorization of SSCs per SRD Safety Criteria 4.1-3 and 4.1-4 in lieu of DOE-STD-1021-93.

Justification: DOE-STD-1021-93 is inconsistent with the top-level safety principles in DOE/RL-96-0006. The functions of this standard are implemented by SRD Safety Criteria 4.1-3 and 4.1-4 and Appendix A to Volume II of the SRD.

Page C-19, App. C, Section C.3.2, Earthquake Ground Motion Response Spectra

Disregard Section C.3.2.1 discussion and Table C-4. Follow 1997 UBC for the RPP-WTP Facility design.

Justification: Section C.3.2.1 discussion and Table C-4 are based on 1994 UBC; the 1997 UBC is more current.

Page C-27, App. C, Section C.4, Evaluation of Seismic Demand (Response)

Use 1997 UBC in lieu of 1994 UBC.

Justification: 1997 UBC is more current.

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Page C-29, App. C, Section C.4.1, Dynamic Seismic Analysis

Use ASCE 4-98 (Draft) in lieu of ASCE 4-86.

Justification: ASCE 4-98 (Draft) is more current.

Page C-31, App. C, Section C.4.2, Static Force Method of Seismic Analysis

Use 1997 UBC in lieu of 1994 UBC.

Justification: 1997 UBC is more current.

Page C-32, App. C, Section C.4.3, Soil-Structure Interaction

Use ASCE 4-98 (Draft) in lieu of ASCE 4-86.

Justification: ASCE 4-98 (Draft) is more current.

Page C-38, App. C, Section C.4.4, Analytical Treatment of Energy Dissipation and Absorption

Design PC-3 (Seismic Category I) SSCs for the elastic seismic response to DBE per Section 3.7.2 of NRC NUREG-0800, Rev. 3 (Draft) with no credit for inelastic energy absorption. Note: Credit for inelastic energy absorption is allowed in the design of PC-3 (Seismic Category II) SSCs.

Justification: This change is made for consistency with NRC acceptance criteria.

Page C-52, App. C, Section C.5.1, Capacity Approach

Use ACI 349 for design of reinforced concrete in lieu of UBC.

Justification: This change is made for consistency with NRC acceptance criteria contained in Section 3.8.4 of NUREG-0800, Rev. 2 (Draft).

Use ANSI/AISC N690 for design of structural steel in lieu of UBC.

Justification: This change is made for consistency with NRC acceptance criteria contained in Section 3.8.4 of NUREG-0800, Rev. 2 (Draft).

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Page C-62, App. C, Section C.7, Special Considerations for Existing Facilities

Delete this section.

Justification: This section deals with existing facilities and the RPP-WTP Facility is a new facility.

Page C-66, App. C, Section C.9, Alternate Seismic Mitigation Measures

Delete this section.

Justification: Seismic base isolation is not planned to be used in the RPP-WTP Facility design.

Page D-3, App. D, Section D.3, Load Combinations

Design structural steel PC-1 and PC-2 structures per AISC Manual of Steel Construction, Allowable Stress Design, Ninth edition.

Justification: The AISC code is preferred because it is a national consensus code.

Design reinforced concrete PC-1 and PC-2 structures per ACI 318-95.

Justification: The ACI 318 code is preferred because it is a national consensus code.

Design structural steel PC-3 SSCs structures per ANSI/AISC N690-94.

Justification: This change is made for consistency with NRC acceptance criteria contained in Section 3.8.4 of NUREG-0800, Rev. 2 (Draft).

Design reinforced concrete PC-3 SSCs structures per ACI 349-97

Justification: This change is made for consistency with NRC acceptance criteria contained in Section 3.8.4 of NUREG-0800, Rev. 2 (Draft).

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Attachment C

Tailoring of ANSI/AISC N690-1994

The following discussion addresses the tailoring of ANSI/AISC N690, "Specification for the Design, Fabrication, and Erection of Steel Safety-Related Structures for Nuclear Facilities," for use by BNFL Inc. as an Implementing Standard for structural design.

Page 22, Section Q1.5.7.1, Primary Stresses

Revise the stress limit coefficients for compression in Table Q1.5.7.1 as follows:

- 1.3 instead of 1.5 [stated in footnote (c)] in load combinations 2, 5, and 6
- 1.4 instead of 1.6 in load combinations 7, 8, and 9
- 1.6 instead of 1.7 in load combination 11

Justification: These changes are made for consistency with the NRC requirements of Appendix F of Section 3.8.4 of NUREG-0800 (Draft Rev. 2).

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Attachment D

Justification for the Elimination of DOE-STD-1021-93 as an Implementing Standard

INTRODUCTION

The RPP-WTP Facility processes and stores radioactive and hazardous materials. Consequently, it is necessary to ensure that the facility can provide an adequate level of safety to facility workers, co-located workers, and the public while also providing protection to the environment. One of the steps to achieving this is to design selected SSCs to withstand the effects of severe natural phenomena hazards (NPH) such as earthquakes, floods, and high winds.

DOE-STD-1020-94, which is an implementing standard for the RPP-WTP facility, provides NPH design and evaluation criteria for an SSC as a function of the its performance category (PC). Therefore, in order to apply DOE-STD-1020-94, a PC must be designated for each SSC that needs to withstand NPH loads.

DOE-STD-1021-93, which was written for use with DOE-STD-1020-94, provides criteria and guidance for selecting the PCs of SSCs. For this reason, DOE-STD-1021-93 was selected as an implementing standard in Part A of the RPP-WTP contract. However, because of changes that have occurred since Part A in the Project's safety classification approach, DOE-STD-1021-93 is no longer directly useable for selecting the PCs of RPP-WTP SSCs.

Note: Unless noted otherwise, throughout this attachment, the term "workers" is meant to apply inclusively to both facility workers and co-located workers.

DIFFICULTIES WITH DOE-STD-1021-93

There are several major difficulties with using DOE-STD-1021-93 as an implementing standard for the designation of PC on the RPP-WTP Project:

1. DOE-STD-1021-93 is based on the safety classification system given in DOE-STD-3009-94 ("Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Safety Analysis Reports," July 1994). DOE-STD-3009-94 provides design requirements for SSCs important to the safety of the public that are different than those for SSCs important to the safety of workers. Treating workers and the public differently is inconsistent with the approach to safety contained in the SRD.

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2. The NPH categorization process in DOE-STD-1021-93 is based on the assumption that the identification of safety classifications of SSCs for non-NPH events is completed prior to the start of the NPH categorization process. This is inconsistent with the standards identification process of DOE/RL-96-0004, which requires that all hazards be identified and assessed when determining hazard control strategies.

3. DOE-STD-1021-93 contains a detailed set of procedures for the systematic application of the performance categorization guidelines contained in the Standard. These procedures do not follow the DOE/RL-96-0004 process nor do they match the approved procedure contained in Appendix A to Volume II of the SRD ("Implementing Standard for Safety Standards and Requirements Identification").

POTENTIAL APPROACHES INVESTIGATED

Three potential approaches for dealing with the issue of how to implement the requirements of DOE-STD-1021-93 were considered:

1. Tailor the existing standard – This is the preferred approach because DOE-STD-1021-93 is currently listed in the SRD as an implementing standard, and tailoring has proven to be an acceptable approach to obtaining regulatory acceptance.

2. Use of an alternative standard – If tailoring should not prove feasible, the next choice would be to identify another standard (or standards) to use for NPH performance categorization.

3. Prepare an *ad hoc* standard – If no other standard(s) can be identified, the Project would need to prepare an *ad hoc* standard to replace DOE-STD-1021-93.

TAILORING DOE-STD-1021-93

DOE-STD-1021-93 has three principal functional areas:

- Preliminary performance categorization of SSCs
- System interaction effects ("two over one protection")
- Recommended application procedures

Tailoring issues associated with each of these functional areas is discussed below.

Preliminary Performance Categorization. Performance Categorization in DOE-STD-1021-93 is based on the safety classification scheme in DOE-STD-3009-94. As such, for NPH purposes, DOE-STD-1021-93 categorizes SSCs important to the safety of the public as PC-3 and SSCs important to the safety of workers as

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PC-2. This two-tiered system is inconsistent with the safety approach given in the SRD. The result is that to tailor DOE-STD-1021-93 for use on the Project requires that a key element of this section be completely rewritten.

System Interaction Effects. The approach given in DOE-STD-1021-93 for system interaction effects is less conservative than the one established in the Project's seismic analysis and design approach. Specifically, the current Project approach requires that any SSC whose failure could prevent a PC-3 SSC from performing its NPH safety function shall also be designated PC-3. Using the process given in DOE-STD-1021-93, this "two over one" SSC would be either PC-1, PC-2, or PC-3 depending on its initial performance categorization and its interaction potential. To tailor DOE-STD-1021-93 in this area would again require that, essentially, the entire section be rewritten and key elements changed. (Note: as an alternative, the Project approach could be revised to match the DOE-STD-1021-93 requirements; however, this would result in a less conservative set of requirements being applied for the evaluation of system interaction effects.)

Recommended Application Procedures. Tailoring the application procedures given in DOE-STD-1021-93 would require them to be completely rewritten. There are three reasons for this: (1) the DOE-STD-1021-93 procedures do not explicitly follow the DOE/RL-96-0004 process; (2) the DOE-STD-1021-93 procedures do not match the approved Project approach contained in Appendix A to Volume II of the SRD; and (3) the DOE-STD-1021-93 procedures assume that the safety classification process (except for NPH categorization) has already been completed.

Based on all of the above, it is clear that the endeavor to tailor DOE-STD-1021-93 would require that the Standard be completely rewritten and that most (if not all) of its essential elements be changed. Consequently, the tailoring of DOE-STD-1021-93 is not considered to be a viable approach.

USE OF AN ALTERNATIVE STANDARD

A review of the SRD indicates that, with minor clarifying additions, sufficient guidance on the NPH performance categorization of SSCs already exists within the SRD and that DOE-STD-1021-93 can be eliminated as an implementing standard in the SRD. Again, this potential approach is discussed in terms of the three principal functional areas of DOE-STD-1021-93.

Preliminary Performance Categorization and System Interaction Effects. SRD Safety Criteria 4.1-3 and 4.1-4 (in conjunction with the implementing standard in Appendix A to Volume II of the SRD) provide essentially all the guidance necessary to perform the preliminary performance categorization and system interaction effect functions of DOE-STD-1021-93.

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The process described by the implementing standard given in Appendix A to Volume II of the SRD will, in the normal course of its application, identify the following "types" of SSCs (Note: this designation of SSCs "types" is established solely for the purposes of this evaluation; these types have no other meaning or significance on the Project):

- Type A - SSCs that have an NPH safety function, i.e., SSCs whose failure during or after a given NPH event could cause the radiation exposure standards given in Table 2-1 of the SRD to be exceeded.
- Type B - SSCs that do not have an NPH safety function but whose failure under NPH conditions could prevent an SSC with NPH safety function from performing its function.
- Type C - SSCs that are Important to Safety but which do not have NPH safety functions.
- Type D - SSCs that are not important to safety but which contain some quantity of radioactive material.

The third paragraph of SRD Safety Criterion 4.1-3 reads as follows:

> SSCs that are designated Safety Design Class and that are required to perform a safety function as a result of a given NPH shall be designed to withstand the NPH loadings of that NPH as provided in Table 4-1.

The requirements in Table 4-1 are equivalent to the PC-3 requirements of DOE-STD-1020-94 (as tailored for use on RPP-WTP). Also, the SSCs being referred to in the Safety Criterion are clearly Type A. Therefore, performance classification guidance is provided for all Type A SSCs. To ensure clarity, the following sentence will be proposed as an addition to the end of the third paragraph of SRD Safety Criterion 4.1-3:

> These SSCs are designated Seismic Category I (SC-I) for earthquakes and Performance Category 3 (PC-3) for other NPH.

Similarly, the fourth paragraph of SRD Safety Criterion 4.1-3 reads as follows:

> SSCs that are designated Safety Design Significant whose continued function is not required for an NPH event, but whose failure as a result of an NPH event could reduce the functioning of a Safety Design Class SSC such that exposure standards might be exceeded, shall be designed to withstand the NPH loadings of that NPH as provided in Table 4-1. For these SSCs, however, for seismic response only, credit may be taken for inelastic energy absorption per Table 2-4 of DOE-STD-1020-94.

Again, the requirements in Table 4-1 are equivalent to the PC-3 requirements of DOE-STD-1020-94 (as tailored for use on RPP-WTP). Also, the SSCs being referred to in the Safety Criterion are clearly Type B. Therefore, performance classification guidance is provided for all Type B SSCs. To ensure clarity, the following sentence will be proposed as an addition to the end of the fourth paragraph of SRD Safety Criterion 4.1-3:

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These SSCs are designated SC-II for earthquakes and PC-3 for other NPH.

Finally, the second and third paragraphs of SRD Safety Criterion 4.1-4 read as follows:

SSCs that may be important to the safety of the TWRS-P Facility shall be designed to withstand the effects of NPH such as earthquakes, wind and floods. The SSCs included under this criterion are:

1. SSCs Important to Safety (either Safety Design Class or Safety Design Significant) that do not have an NPH safety function; and
2. SSCs that are not Important to Safety and that have significant inventories of radioactive or hazardous materials but in amounts less than quantities that might lead to an Important to Safety designation.

SSCs included under this criterion shall be designed to withstand the NPH loadings as provided in Table 4-2.

The requirements in Table 4-2 are equivalent to the PC-2 requirements of DOE-STD-1020-94 (as tailored for use on RPP-WTP). Also, the SSCs being referred to in the Safety Criterion are clearly Types C and D. Therefore, performance classification guidance is provided for all Types C and D SSCs. To ensure clarity, the following sentence will be proposed as an addition to the end of the second paragraph of SRD Safety Criterion 4.1-4:

These SSCs are designated Seismic Category III (SC-III) for earthquakes and Performance Category 2 (PC-2) for other NPH.

In summary, adequate guidance for both performance categorization and system interaction is already provided within the existing requirements of the SRD. It is also important to note that this SRD guidance results in a set of requirements that is, in all cases, the same or more conservative than the requirements that would be imposed by DOE-STD-1021-93. This is demonstrated in Table D-1 on the following page.

Recommended Application Procedures The Implementing Standard for Safety Standards and Requirements Identification contained in Appendix A to Volume II of the SRD has been approved by the DOE Regulatory Unit as an acceptable method for meeting the requirements of DOE/RL-96-0004 on the RPP-WTP Project. This implementing standard currently provides all the detailed application procedures necessary to perform and document the safety assessment process. Consequently, it serves as a fully satisfactory substitute for the Recommended Application Procedures function of DOE-STD-1021-93.

Based on the preceding evaluation, the existing guidance in the SRD (with the clarifications described above) provides an adequate replacement for the requirements contained in DOE-STD-1021-93. As a consequence,

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DOE-STD-1021-93 can be eliminated as an implementing standard in the SRD without a reduction in the ability of the RPP-WTP facility to provide adequate protection to individuals from the consequences of NPH events.

Table D-1. DOE-STD-1021-93 Performance Categorization vs. the Existing Guidance in the SRD

SSC Description	Performance Categorization per DOE-STD-1021-93	Performance Categorization per RPP-WTP SRD
SSC with NPH safety function that protects the public	PC-3 (for seismic, credit allowed for inelastic energy absorption)	PC-3 (for seismic, no credit allowed for inelastic energy absorption)
SSC with NPH safety function that protects facility and/or co-located workers	PC-2	PC-3 (for seismic, no credit allowed for inelastic energy absorption)
SSC whose NPH failure could prevent another SSC from performing its NPH safety function	PC-1, PC-2, or PC-3 (for seismic, credit allowed for inelastic energy absorption)	PC-3 (for seismic, credit allowed for inelastic energy absorption)
Important to Safety SSC with no NPH safety function	PC-2	PC-2
SSC not Important to Safety but which has some quantity of radioactive material	PC-1	PC-2

PREPARATION OF AN *AD HOC* STANDARD

Because the existing guidance in the SRD is deemed to be acceptable, an *ad hoc* standard is not needed.

CONCLUSIONS

Tailoring of DOE-STD-1021-93 is not appropriate because the entire standard would need to be rewritten.

The existing requirements currently in the SRD are sufficient to allow elimination of DOE-STD-1021-93 as an implementing standard.

Use of the existing requirements in the SRD results in a set of requirements that is conservative with respect to DOE-STD-1021-93.